

# ON FORMING A NEW ACETABULUM IN CERTAIN RESECTIONS OF THE HIP JOINT.

By ALEXANDER OGSTON, C. M.,

OF ABERDEEN.

REGIUS PROFESSOR OF SURGERY AT THE UNIVERSITY OF ABERDEEN.

THE operative cure of Congenital Dislocation of the Hip Joint, was, I believe, first introduced into practice in 1884, by Dr. F. Margary of Turin, [*Archivio di Ortopedia*, Vol. I, page 381.] I have had occasion to carry out his operation three times, viz., on the 12th of August, 1885, on both hip joints of a young man in the Aberdeen Royal Infirmary, and on the left hip joint of another young man in the same institution on the 8th of October, 1887.

In all these three there existed the usual very marked flexion of the femur on the pelvis, causing, when in the upright position, the unseemly projection of the sacrum behind, resembling the seat of a chair, with shortening and a waddling gait. In all three the result of the operation was so far satisfactory. The position of the pelvis was rectified by the operation, and its ungainly projection backwards no longer existed when the legs were put straight down. On the left leg of the former patient the cure was rapid, and resulted in a firm movable new joint on which he could stand and walk well, but in his right hip uneasiness and weakness remained for many months, although they eventually disappeared, and when I last saw him, a year ago, he was in a condition of marked improvement as compared with his original state. On the second patient (left hip) the same uneasiness was complained of, and still remained when last he called to show his joint. In both these weak joints the upper end of the femur stood decidedly away from the pelvis, and when the knee was moved described an arc of a small circle in the inverse direction, as if the bond of union with the pelvis on which the motions centred were an inch or so below it. In the left hip of the former patient where the

result was so satisfactory the upper end of the femur did not stand out from the os innominatum in the same way, but lay close to it and was the centre of the movements of the new joint.

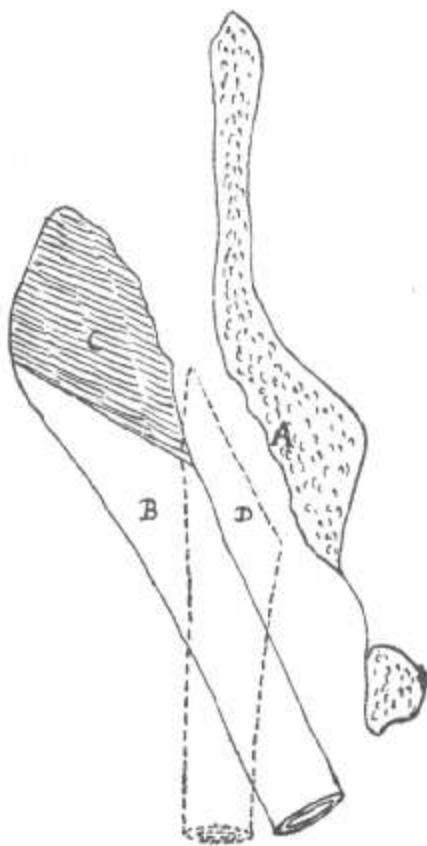


FIG. 1. DIAGRAM ILLUSTRATING THE OPERATION WITHOUT FORMATION OF A NEW ACETABULUM.

- A. The obliterated acetabulum.
- B. The femur, head and neck absent, in its adducted and flexed position.
- C. The portion removed at the operation.
- D. The femur as placed in position after the operation.

The reason of the weakness seemed to me to be the following: 'During all three operations it was observed that the acetabulum had entirely disappeared, its place being occupied by irregular bone (see Fig. 1, A,) and that the caput and cervix had likewise disappeared, a rough surface on the inner aspect of the trochanter major having replaced them (see Fig. 1, B.) The upper end of the femur was therefore sawn obliquely off (see Fig. 1, C,) so as to leave a bevelled surface which, when placed against the site of the acetabulum, would, it was hoped, become united to it by fibrous tissue. The patients were therefore treated by extension by a weight at the foot sufficient to keep the femur in the desired place (see Fig. 1, D.) In only one of the three instances did this design seem to have been successful; although all healed

by first intention and had an aseptic feverless course.

The idea of making a new acetabulum to retain the upper end of the femur was formed on the experience gained in these three operations.

In the meantime the result of another case strengthened the belief that such a plan would be advantageous. This was a spontaneous dislocation, the result of bygone non-suppurative inflammation. Mr. Wm. Adams had in the *British Medical Journal* of 1st November, 1884, page 860, published a case of spontaneous dislocation of the femur treated by resection of the caput. Following his example, I treated this case, which occurred in a female child in the Aberdeen Infirmary, by a resection of the head, on the 20th November, 1886. So far as healing went, the result was perfect, and the functional result of the operation was a very good one; but it seemed to leave something still obtainable. The union was firm, and the patient walked well, but the bones did not bear on one another so closely as I thought they might have done.

When, therefore, another case of spontaneous dislocation, also in a female child and the result apparently of a bygone acute non-suppurative arthritis, presented itself at the Infirmary for treatment, it was decided to endeavor to make a new acetabulum, and to shape the femur so that it would fit into it.

Several things pointed to such an attempt being feasible, while it was evident that the plans of Margary and Adams were not quite satisfactory. Küster and Israels [*Verhandlungen der Deutschen Gesellschaft für Chirurgie* vol. 12, pages 118 and 120] had drawn attention to the formation of a new caput femoris in resections of the hip joint. Volkman's recommendation to cut the upper end of the femur transversely through so as to leave a projecting point like a coronoid process in the neighborhood of the lesser trochanter, although a great improvement in ordinary resections on the older form of resection of the caput alone, where the bone slides past the acetabulum, blocks the wound and leads to retention of wound secretion, would be of little use in congenital or spontaneous dislocation where the acetabulum is totally obliterated, as I had found it to be at the operation of the 20th November, 1886. Further I was, and still am satisfied, from repeated trials that

Volkman's method of after treatment in the abducted position of the lower extremity, whereby he hoped to direct the femur

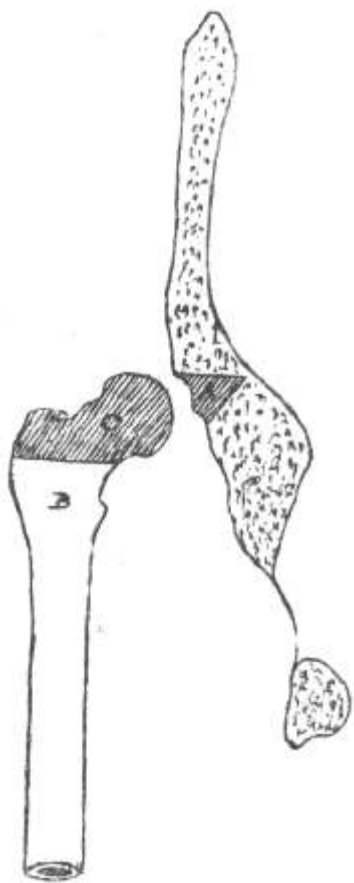


FIG. 2. THE OPERATION OF FORMING A NEW ACETABULUM AS PLANNED.

- A. Notch to be cut in os innominatum.
  - B. Femur shaped to fit the notch according to Volkman's method of resection by removal of the head and part of the neck and trochanter.
  - C. Part to be sawn off.
- ilium (Langenbeck's incision,) gave free access to the head of

towards, instead of past the acetabulum, and utilize the contraction of the soft parts to press the bone into the acetabulum instead of upwards behind it, is a mistake. It is almost impossible to carry it out, as the discomfort which it causes leads the patient to alter the position of his pelvis and sound extremity which we cannot properly fix, and so avoid the irksome direction of the diseased limb. In a word, it seems to me to possess no advantage and many disadvantages.

In deciding to cut a new acetabulum and shape the femur so as to fit it my idea was to make a V shaped notch in the os innominatum in the situation of the acetabulum (see Fig. 2 A.) and cut the upper end of the femur in Volkman's fashion so that it would easily and naturally lodge in it (see Fig. 2, B.)

But when the child was put under chloroform and the parts exposed, on the 11th January, 1888, it was found that this could not well be done. The usual incision upwards and backwards from the middle of the great trochanter towards the posterior superior spine of the

the bone, and allowed its being sawn off according to Volkmann's plan, leaving the usual projecting point. But when the outer surface of the os innominatum was examined (no hollow or trace of an acetabulum was found) it appeared clear that the projecting point of the femur could not be trusted to remain in a mere notch, as the least movement would have slipped it out of it. Moreover, the state of the parts rendered it probable that, had it remained firm in the notch, bony ankylosis would have occurred, and to the patient this would have been a loss instead of a gain in whatsoever position the bones joined.

But it appeared not at all unlikely, from the known tendency of perforations in the os innominatum to be filled up with fibrous tissue instead of bone, that if a hole were made right through the bone, the point of the femur, when lodged in this opening, would readily be retained in it if the aperture were sufficiently large, and would, aided by passive movement during the after treatment heal into it by fibrous union, so as to leave a movable joint and a firm articulation where bone would bear on bone.

Accordingly a gouge was entered on the outer surface of the os innominatum, just above where the acetabulum should have been. It was thought better to do so there than at the site of the acetabulum, so as to avoid undue tension. The bone was easily pierced by the repeated removal of small portions. The opening was enlarged around its edges by the gouge until it was big enough easily to admit the point of the thumb. The projecting point of the femur was readily placed in it (see Fig. 3,) and was found to remain there even on moderate flexion and extension.

The wound was closed by continuous buried sutures of catgut that united the soft parts to each other layer by layer and muscle to muscle until the skin was last of all also united throughout by the continuous catgut suture. No drainage was used. Listerism was employed throughout, and the dressings were of Lister's carbolized gauze. No extension was applied, but the parts were kept immovably in position by a Plaster of Paris bandage that included the pelvis and both

hips. This, along with the dressings, was removed in three

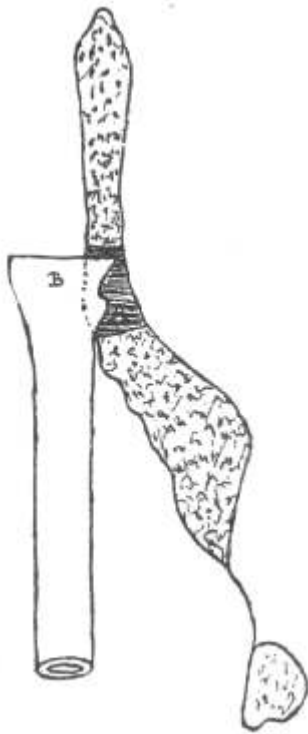


FIG. 3. THE OPERATION OF FORMING A NEW ACETABULUM AS CARRIED OUT.

- A. Perforation of ilium.
- B. Femur placed in it.

weeks, when the wound was found healed per primam. The child's temperature never rose.

In a word the result was good. The child had no pain, even on passive movement, and in seven weeks was walking about with a movable hip joint. The bones seemed to bear on each other. The femur lay quite close to the pelvis and could not be pushed in any direction or to any degree out of its position. The deforming flexion and adduction at the hip joint had quite disappeared.

In aseptic operations, as for congenital or spontaneous dislocations, such a new articulation may with safety be made; but in resection for ordinary (tubercular) morbus coxæ, the danger of tubercular auto-inoculation of the textures within the pelvis would be, I believe, far too great to justify its being attempted.